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(54) AUTOMATIC TRANSMISSION FOR MOTOR VEHICLES

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(56) References Cited

4,070,927 A	1/1978	Polak 74/765
4,939,955 A	7/1990	Sugano 475/278
		Pierce 475/276

U.S. PATENT DOCUMENTS

5,295,924	Α	3/1994	Beim	475/275
5,435,792	Α	7/1995	Justice et al	475/276
5,460,579	Α	10/1995	Kappel et al	475/276
5,533,945	A	7/1996	Martin et al	475/276
5 536 220	Α	7/1996	Martin	475/275

FOREIGN PATENT DOCUMENTS

DE	38 25 733 A1	2/1989	B60K/17/08
DE	42 24 361 A1	1/1993	F16H/3/62
DE	38 25 733 C2	7/1996	F16H/3/62
EP	0 719 961 A2	7/1996	F16H/3/66
JP	04290649	10/1992	F16H/3/62
JP	08200456	8/1996	F16H/3/62
JP	10259861	9/1998	F16H/3/66
wo	96/01381	1/1996	F16H/3/62

^{*} cited by examiner

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57) ABSTRACT

The invention concerns a transmission (1) with automatic shifting capabilities and with three spider supported planetary sets (2, 3, 4), three brakes (5, 6, 7), and two clutches (8, 9) for the shifting of six forward moving gears and one reverse gear and having an input shaft (10) and an output shaft (11). In this way, the input shaft (10) is in continual connection with the sun gear (16) of the second planetary set (3) and the input shaft (10) is connectable to the sun gear (12) of the first planetary set (2) by means of the first clutch (8) and/or by means of the second clutch (9) is also connectable with the spider (15) of the first planetary set (2). Further, the sun gear (12) of the first planetary set (2) by means of the first brake (5) and or the spider (15) of the first planetary set (2) by means of the second brake (6) and/or the sun gear (20) of the third planetary set (4) by means of the third brake, are all connectable with the housing of the transmission.

21 Claims, 3 Drawing Sheets

